

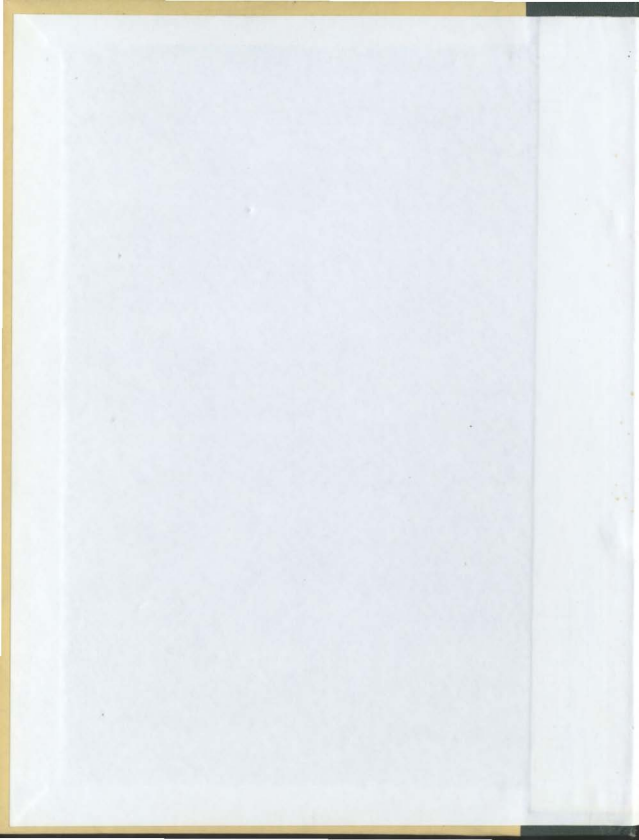
VOCATIONAL INDECISION AMONG HIGH SCHOOL STUDENTS
IN NEWFOUNDLAND

CENTRE FOR NEWFOUNDLAND STUDIES

**TOTAL OF 10 PAGES ONLY
MAY BE XEROXED**

(Without Author's Permission)

MICHAEL J. FAGAN



VOCATIONAL INDECISION AMONG HIGH SCHOOL STUDENTS
IN NEWFOUNDLAND

A Thesis
Presented to
the Department of Educational Foundations
Memorial University

In Partial Fulfilment
of the Requirements for the Degree
Master of Education

by
Michael J. Fagan
April 1974



ABSTRACT

A smooth and efficient transfer of young people between school and work seems to be of vital importance to our society. However, an almost anomalous situation seems to exist: Breton and McDonald (1967) report that 33.7 percent of the boys and 19.7 percent of the girls in Grade Eleven in Newfoundland had not made a career choice.

This study attempted to bring together some of the correlates of vocational indecision and incorporate them into a theoretically meaningful causal scheme. The procedure used in the quantification of the causal model is a generalization of multiple linear regression known as path analysis. The sample consisted of the some 1,600 Grade Eleven students who were part of the Career Decisions Project carried out by Breton and McDonald in 1965-66.

While this study explained only a small proportion of the variance in vocational indecision, it did result in some elucidation of the complex process of vocational decision-making as it applies to the youth of Newfoundland.

ACKNOWLEDGEMENT

The author wishes to acknowledge the guidance and assistance received from Dr. T. H. Williams, Dr. W. J. Gushue, and Dr. H. W. Kitchen, who constituted his thesis committee; and as well Professor J. W. Bulcock, for his generosity with professional knowledge and time.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vii
LIST OF FIGURES.	viii
CHAPTER	
I. THE PROBLEM.	1
INTRODUCTION TO THE PROBLEM:	1
Purpose of the Study	1
Statement of the Problem.	1
JUSTIFICATION FOR THE STUDY.	2
Consequences for the Individual.	3
Consequences for our Educational System.	4
Consequences for Society	4
THE PROCESS OF CAREER CHOICE	5
Socio-Economic Status.	6
Family Interrelationships.	7
School Factors	7
THE NEWFOUNDLAND SITUATION	9
Social History	9
Economic History	11
II. THE RATIONALE.	13
THE THEORETICAL MODEL.	13
THE GENERAL MODEL.	15
Background Factors	15

CHAPTER

Page

Social Structural Influences	17
Mental Ability	18
EXPERIENTIAL FACTORS	18
School Experiences	18
Family Experiences	19
Experiential Factors as Intervening Variables.	20
Social Structural Influences Upon Family Experiences.	20
Social Structural Influences Upon School Experiences.	20
Mental Ability Upon Family Experiences	21
Mental Ability Upon School Experiences	21
Attitudinal Factors.	22
Attitudinal Factors as Intervening Variables	22
Family Experience Upon Attitudes	22
School Experience Upon Attitudes	22
Mental Ability Upon Attitudes.	23
Sex as a Variable.	23
THE SPECIFIC PATH MODEL.	24
Hypothesized Relationships	27
III. METHODOLOGY.	32
PATH ANALYSIS.	32
Assumptions.	34
Assumption of Interval Type Data	34
The Path Model	35
Standardized Versus Unstandardized Regression Coefficients	37

CHAPTER	Page
The Identification Problem	38
IV. THE PROCEDURE.	40
POPULATION AND SAMPLE.	40
INSTRUMENTS.	41
OPERATIONAL PROCEDURE.	41
OPERATIONALIZATION OF THE VARIABLES.	41
Vocational Indecision.	42
Self Attitude.	44
Personal Efficacy.	45
Parental Support	45
Family Decision-Making	47
Experience of Failure.	48
School Program	48
Father's Occupation.	49
Parents' Education	49
Community Size	50
Employment Stability	51
Mental Ability	51
V. PRESENTATION OF THE RESULTS.	52
VI. DISCUSSION AND CONCLUSIONS	62
IMPLICATIONS FOR RESEARCH AND PRACTICE	66
BIBLIOGRAPHY	69

LIST OF TABLES

TABLE	Page
1. Correlation Matrix for Vocational Indecision Variables.	43
2. Principal Component Analysis: Vocational Indecision Variables.	44
3. Correlation Matrix for Parental Support Variables.	46
4. Principal Component Analysis: Parental Support Variables.	47
5. Matrix of Product Moment Correlations Separately by Sex.	53
6. Path Coefficients (Males).	56
7. Path Coefficients (Females).	57
8. Proportion of Explained Variance in Endogenous Variables.	58
9. Unstandardized Partial Regression Coefficients	59
10. Deviations of Implied Correlations from Observed Correlations.	60

LIST OF FIGURES.

FIGURE	Page
1. The General Causal Model	16
2. The Causal Model	25
3. The Path Model for Males	54
4. The Path Model for Females	55

CHAPTER I

THE PROBLEM

INTRODUCTION TO THE PROBLEM

Purpose of the Study

The objective of this study is to develop and quantify a causal model which might explain the fairly high rate of vocational indecision among high school students in Newfoundland (Breton, 1972). The model brings together a number of established relationships, and incorporates them into a system of causal relations. The model is quantified with data on a sample of some 1,600 Newfoundland students.

The study will also indicate how planned social intervention might prove effective in reducing the indecisiveness of students with regard to the choice of a career. It will, in other words, make it possible to determine what sorts of counterbalancing influences may be brought to bear on students who are likely to experience difficulty in the vocational decision-making process.

Statement of the Problem

A smooth and efficient transfer of young people between school and work is of crucial importance to our society (Breton & McDonald, 1967, p. 3). With the possible exception of organizing itself for overall functioning, none of society's functions is taken more seriously than preparing its young for economic roles in adulthood (Clark & Gist, 1938, p. 36).

Indeed, this is a necessary development in order to ensure social survival.

This investigation attempts to demonstrate the effects on career decision-making of a number of social and personal factors. The model argues for causal relationships among twelve variables organized into four sets: (1) Background Factors, (2) Present Experiences, (3) Attitudes, and (4) Vocational Decision/Indecision. Present Experiences and Attitudes are treated as intervening variables between Background Factors and the ultimate dependent variable, Vocational Decision/Indecision.

JUSTIFICATION FOR THE STUDY

Breton and McDonald (1967, p. 3) report that 33.7 percent of the boys and 19.7 percent of the girls in Grade Eleven in Newfoundland did not express a preference for any type of work or occupation; 34.7 percent of the boys and 27.0 percent of the girls did not know what type of work they expect to have as a career.

It seems that approximately one-third of Newfoundland's high school students will either make no immediate attempt to enter the occupational world, or they will make an arbitrary decision. To voluntarily remain out of the labour market is to further compound our already serious social problem of unemployed youth. To choose an occupation or career without any firm commitment to that occupation or career, is to make an arbitrary decision on a matter that may affect them the rest of their lives. This is not to state that once a person enters upon a career that the decision to do so is irrevocable. Indeed, some occupations, such as clerks, retail salesmen, plant workers, and labourers, are known as "entry occupations" (Blau and Duncan, 1967, p. 51), because of the transfer later on of people from these to other occupations. Nevertheless, with regard to the signi-

ificance of career Beginnings, Blau and Duncan (1967, p. 49) report that ten of the seventeen occupations listed (ranging from top managerial to unskilled labour) retain a disproportionate share of workers and supply comparatively little manpower to other occupations. Once people start to work in these occupations they tend to remain in them. These occupations include service labourers, construction workers, salesmen (other than retail), farm workers, and craftsmen.

A clearer understanding of the process of vocational choice has implications for the individual concerned, for our system of education, for the province as a whole, and for the rest of Canada.

Consequences for the Individual

In any society, the educational system plays an important role in the training, development, and allocation of its manpower resources. As Shah et al. (1971, p. 173) point out:

It (the educational system) sorts people according to their interests and abilities, channels them into streams of training which develop their interests and potentials, encourages them to aspire to adult roles that are in keeping with their talents. . . .

Cotgrave & Fuller (1972, p. 59) say in this regard that

future commitment to an occupation feeds back and moulds and sustains the development of the self concept through the process of anticipatory socialization. It is career commitment, not the course, which is the major determinant of identity.

The expression of a vocational choice is important as well in that it is likely to involve a realistic appraisal of possibilities conveyed to the individual by those around him and by his own self evaluation (Haller & Portes, 1973, p. 68).

In terms of the implications of career decision-making for the individual it should also be noted that in our industrial society, access

to scarce societal resources, such as power and property, is acquired through the attainment of certain social positions, or statuses, the most important of which is an occupation (Tumin, 1970, p. 13). The effect of vocational choice on the individual then lies with the various ways in which it affects socio-economic attainment and the development of self.

Consequences for our Educational System

The implications of a clearer understanding of vocational decision-making for our system of education is that it would help meet one of the aims of public education in Newfoundland as expressed by the Minister of Education in 1958:

To give pupils guidance in the choice of a career and to provide the opportunity to begin preparation for occupational life (Rowe, 1968, p. 7).

From the findings of Breton and McDonald (1967, p. 3), namely, that 33.7 percent of the boys and 19.7 percent of the girls in Grade Eleven in Newfoundland did not express a preference for any type of work or occupation, it seems that the schools are failing in part to fulfill this objective. This failure may be due to the inadequacy of our understanding of the social processes involved in occupational choice, and hence, of what variables are manipulatable and with what effect. This study will attempt to provide knowledge of the processes involved and hence indicate where effort might be applied to help the schools attain this goal.

Consequences for Society

For the province as a whole, and for the rest of Canada, a clearer understanding of the process of occupational choice could mean a more efficient use of our human resources, a most necessary development, given the elaborate division of labour and unprecedented range of occupational

specilization during the past few decades; the Dictionary of Occupational Titles presents detailed description of over 23,000 occupations. An understanding of the factors underlying occupational choice could help eliminate wastage of human resources, and as well, wastage of material resources on people in inappropriate educational or vocational programs (Williams, 1969, p. 2).

THE PROCESS OF CAREER CHOICE

Many students find it difficult to translate their academic interests into meaningful careers. This may be due to a variety of causes, as many empirical studies on the subject have shown. This section will present a review of the literature in some particular areas of career indecision.

(Some studies of career preferences have been carried out in Newfoundland, for example those of Long (1970) and Vickers (1972). However these studies have concentrated on those students who already express an occupational choice, rather than on the process of occupational choice.

Occupational decision-making is a process that extends over many years (Breton, 1972; Ginzberg, 1962). There is no single time at which all young people decide upon one out of all the possible careers open to them, but there are some crucial decision points at which their lives take decisive turns. A person's occupational choice is not a one-time decision, but the cumulative result of many decisions over time. These decisions reinforce each other until the occupational path open to an individual has been narrowly delineated (Ginzberg, 1962, p. 268). Most people will agree that the senior year of high school is a time when it would be most desirable for students to clearly define their plans regarding the ultimate

choice of an occupation, or at least to narrow the range of possible occupations.

Empirical studies have shown a variety of antecedents to be associated with occupational choice. The following sections deal with some of these factors.

Socio-Economic Status

It is well known that poverty or low socio-economic status has adverse effects on occupational chances. Low socio-economic families usually have more children among whom their limited resources must be divided, and live in areas where educational and occupational opportunities are greatly restricted. Blau and Duncan (1967, p. 403) point out that children who grow up in the lower areas tend to have not only poorer parents, but also less educated parents, receive less education themselves, and must start work early in what might be described as an undesirable job.

Empey (1956) concluded from his study that while the lower class youngsters aspired to get ahead, they aspired to occupations at different status levels from those from higher strata. "Their aspirations were perhaps the result of conditioning at particular socio-economic levels" (Empey, 1956, p. 708). He reported a correlation of .60 between present level and preferred level of occupational status, and a correlation of .55 between present level and anticipated level of occupational status (Empey, 1956, p. 707). The importance attributed to social class as a variable in sociological research is evidenced by its pervasiveness in the literature; in addition to those already cited, see for example Sewell et al. (1957), Sewell and Shah (1967), (1968), and Breton (1972).

Family Interrelationships

The family into which a person is born may exert a profound influence on his career choice. The influence of parents is perhaps greatest amongst children in the intermediate range of ability, among the so-called "border-line" cases (Boocock, 1972, p. 65). The outstandingly able will often make their own way whatever the family circumstances; and the outstandingly dull will have difficulty whatever backing they receive. But the great majority are neither outstandingly able nor outstandingly dull; for them, parents are often decisive.

Simpson (1962) showed that a working class boy was most likely to aspire to a high-ranking occupation if he had been influenced in that direction by both parents and peers, and least likely if he had been subject to neither of these influences. Among working class boys, 71.4 percent of those high in both parental and peer influences aspired to high-ranking occupations, compared with only 25.6 percent of those low in both types of influences (Simpson, 1962, p. 527).

Dynes et al. (1956) reported that unsatisfactory inter-personal relationships in a child's family were significantly related to the level of occupational aspirations of that child. The degree of parental attachment and the level of occupational aspiration showed a relationship that was significant at the .01 level (Dynes et al., 1956, p. 214). The nature of the family system, then, and the concomitant socialization of the children, seems to indicate that experiences within the family will have a significant effect on vocational decision-making.

School Factors

Schools differ from each other in many ways, ranging from physical

facilities to the social context formed by the members of school system, and schools differ in the impact they have on different groups (Biddle, 1970, p. 179).

Size is an obvious facet along which schools may be differentiated from one another. Schools in Newfoundland range in size from the isolated, single-teacher school involving a mere handful of students to urban schools of more than a thousand students. School size has been extensively studied, but with rather inconclusive results. Conant (1959) made a strong case for the large comprehensive high school. By contrast, Barker et al. (1962) favour the smaller schools. Campbell (1970) concludes that since large schools are here to stay, that measures be taken to offset the potentials for detrimental effect these schools may have.

The Mollenkopf and Melville (1956) study showed the relationships between school averages on several sets of achievement and aptitude tests with thirty-four different school characteristics. The four characteristics showing the strongest relationships were: geographical location; per pupil expenditure; whether or not the school was in an urban, suburban, or rural community; and the number of guidance counsellors and other specialists on the school staff. The extent of home influence is emphasized by the American report (Coleman et al., 1966, p. 325):

Taking all these results together, one implication stands out above all: That schools bring little influence to bear on a child's achievement that is independent of his background and general social context; and that this very lack of an independent effect means that inequalities imposed on children by their home, neighbourhood, and peer environment are carried along to become the inequalities with which they confront adult life at the end of school.

It may be interesting to study the relationship of career indecision with these and other variables. However, the identification of individual

correlates cannot adequately explain the process of vocational choice; indeed, it may be highly misleading. It might be argued that any relationship found was "spurious," that is, a third variable was causing both variables to vary in such a manner that a correlation was obtained.

THE NEWFOUNDLAND SITUATION

In recent years a number of major research studies have been conducted attempting to link some of these correlations together, to explain the social processes involved in the occupational choices of youth. See, for example, Breton (1972) who studied Canadian youth, and Sewell et al. (1969) who studied Wisconsin youth. However, our understanding of the vocational decision-making process, as it applies to the youth of this province, is scant and inconclusive. Research studies such as those cited above may be of limited value to Newfoundland, given the particular process of social and economic development that has taken place in Newfoundland. The intent of this section, then, is to show how certain factors of Newfoundland's history make it difficult to generalize to the Newfoundland situation from studies done elsewhere.

Social History

Newfoundland, more so than any other part of Canada, seems to be holding on to the more conservative values, and preserving a culture historically rooted in the pre-industrial societies of Ireland and the West of England (Noel, 1971, p. 263). This is encouraged by natural insularity, the absence of substantial immigration, and by the characteristics of the island's economic life. Gushue (1973, p. 2) points out that:

It's a nation (Newfoundland) in the sense that Quebec is a nation, not politically or economically, but culturally. We are

a separate, homogeneous entity. . . . We don't belong to the Third World Model either. . . . Neither are we like rural New Brunswick or Northern Maine.

The social patterns and attitudes of fishermen and farmers are substantially influenced by the indeterminacy and insecurity of these occupations, often classified as "acts of God." Men often cope with these unknowns by becoming fatalistic: "If we didn't do so well this year, well, perhaps next year will be better." These individuals do not earn a fixed income; their incomes are not guaranteed by skills, or educational background (Lucas, 1971, p. 397). This notion of the fatalism of Newfoundlanders has attracted the attention of a number of contemporary Newfoundland writers; see, for example, Brown (1972), Horwood (1966), Mowat and de Visser (1968), Kitchen (1965).

Whitaker (1967, p. 374) associates certain personal characteristics of endurance and individualism with the constant contact of man with the sea, perhaps the least predictable of the elements. He further states that most Newfoundlanders have immediate or recent connections with sea-faring occupations; the chance of sudden death is a familiar concept, which in turn moulds their attitudes towards such fundamental questions as the meaning of life, and man's relationship with the supernatural.

The survival of ecclesiastical dominance in the administration of education in Newfoundland is evidence of the continuing interest of Newfoundlanders in questions of a religious or sectarian nature. As a result of our school system, students are still kept aware of the nature of denominational differences.

Even though the proportion of urban dwellers in Newfoundland is constantly increasing, there is still a large number of those people who themselves originated in the rural areas, and who may well be presumed to

have brought with them some aspects of the rural ethic (Whitaker, 1967, p. 373).

Another factor which might seem to mitigate against social change in Newfoundland is the proportion of the population that is native to the province. Ninety-eight percent of Newfoundland's inhabitants were born in the province--by far the highest ratio of native to immigrant of any Canadian province. The two percent strangers, which are likely clustered in the larger centres, are not sufficient to have a major influence.

Economic History

In recent years this province has been subject to a modernization process emphasizing industrialization, urbanization, and a resettlement of rural communities. While this modernization process has brought increased material prosperity to the majority of the population, it has at the same time led to increased unemployment and left a large minority on public welfare (Wadel, 1969, p. 23). This inability to secure employment, to earn one's living, appears to lead to other problems in role fulfillment and in relations with one's family and community (Wadel, 1973, p. xii).

There has been traditionally a concentration of the Newfoundland work force in low status occupations, and this pattern has not changed much in recent years. In 1961, 18.2 percent of the male labour force in Newfoundland were fishermen, loggers, or miners; this compares with the Canadian average of 3.8 percent (Breton & McDonald, 1967, p. 124).

Some of the major industries in Newfoundland, such as fishing, forestry, and construction, are strongly influenced by the climatic conditions. Seasonal fluctuations in employment are substantial; in 1966 unemployment rose to a high of 17.1 percent of the labour force from a low

of 6.5 percent in 1965 (Pushie Report, 1967).

This problem of unemployment and underemployment in Newfoundland is compounded by the fact that in many rural and marginally rural communities in Newfoundland, income from various welfare sources, combined with subsistence level fishing-hunting-farming may equal, or even surpass, income from unskilled work. The incentive to work is therefore quite low, resulting in the chronically unemployed (Wadel, 1973, p. 4).

These aspects of Newfoundland's economic history, particularly as they relate to the labour force, seem to have one obvious concomitant as far as career choice is concerned; that is, Newfoundland students are rather restricted in the availability of role models. All this seems to indicate then the danger of formulating policy for Newfoundland based on research findings coming from other areas, and to indicate a need for more research into the Newfoundland situation.

CHAPTER II

THE RATIONALE

THE THEORETICAL MODEL

Before presenting arguments for each of the cause-effect relationships in the model, an attempt will be made to link the variables of the model into the theory at a more general level. The model adopts the process of socialization as one of its basic frames of reference. Socialization may be defined as the process by which an individual learns to function within his particular environment (Elkin & Handel, 1972, p. 19). It need not be stressed that the individual is socialized in all the social structures in which he participates; by his school, his peer group, by his family and the social position they occupy, by the size of the community in which he lives, by the racial and religious composition of the community, and an almost endless list of factors (Danziger, 1970, p. 18). However, for the purpose of this paper, certain limits must be placed on the number of influences to be considered.

An individual's membership in a particular social class has implications for his socialization that are deep reaching and all pervasive. Kohn (1963, p. 471) says:

Members of different social classes, by virtue of enjoying (or suffering) different conditions of life, come to see the world differently, to develop different conceptions of social reality, different aspirations and hopes and fears, different conceptions of the desirable.

Social class determines, then, the differential access to the goods and services of the world, or the different "life chances" and life styles afforded groups with unequal amounts of wealth, influence, prestige, etc. (Elkin & Handel, 1972, p. 70).

Perhaps the readiest means of identifying a person's social class is by his occupation, or, for a young person, by the occupation of his father. That which is generally referred to as the "upper middle" or "middle" class consists primarily of families where the father is relatively affluent, a professional, or businessman. The "lower" class consists generally of semi-skilled and unskilled labourers, who work irregularly, and the chronically unemployed. While this division into two or three classes is an oversimplification of reality--looking only at the extremes--it points to an obvious fact about a certain segment of society, that is, it is poor; but the difference between it and other segments of society is not simply income and what it can buy. Social classes are ways of life, and therefore "socialization environments for the children born into them" (Elkin & Handel, 1972, p. 72).

The Plowden Report, an English study published in the report entitled Children and their Primary Schools (1967) showed that even by age fourteen, more of the variance in school progress between and within schools was explained by the social and economic position of the students' parents than by any of the school factors included in the analysis.

In the process of socialization, and as a result of experiences acquired at home and in school, the individual acquires standards of behaviour that will determine how he will act in subsequent situations. If a student is given ample opportunity to involve himself in activities of a progressively responsible nature, then he is more likely to cope successfully.

with such matters as vocational decision-making. A rather important contribution to the child's development, in this regard, is a high level of parent-child interaction, especially in the form of parental support and praise for the achievement of approved tasks. (Boocock, 1972, p. 62).

THE GENERAL MODEL

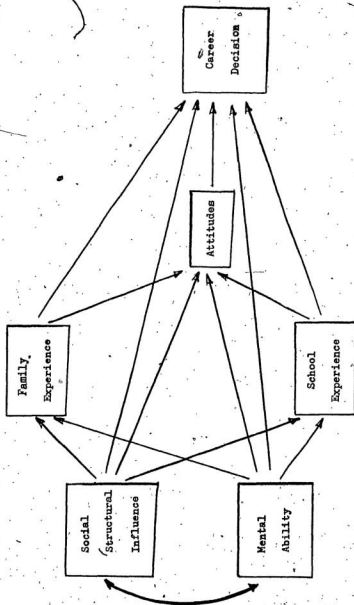
In the interests of clarity, a condensed version of the basic model is presented at this time so that the following discussion may refer to it (see p. 16). Single headed arrows represent the hypothesized cause-effect relationships, the effects lying at the heads of the arrows. The double headed arrows represent a correlation among pre-determined variables, and an explanation of this relationship is taken to be outside the scope of this model.

Background Factors

The variables included in the model as background factors are certainly not exhaustive of all such important influences. Blalock (1968, p. 159) in this regard points out that "the process of relating theory and research involves postulating theoretical models representing oversimplified versions of reality." The possible inclusion of other variables such as personality factors; among a variety of others, has been taken to be outside the scope of this model.

Variables that have been labelled Social-Structural Influences, namely, the socio-economic status of the family as determined by the father's occupation, the education level of both parents, the father's employment stability, and community size, as well as Mental Ability, are considered as given factors and will be treated as exogenous or predeter-

Figure 1
The General Causal Model



mined variables.

Social Structural Influences

The status a child enjoys due to his membership in a certain family of a certain social class affects not only his experiences in that particular family, but in the larger community as well. This study looks at some of these effects, especially those considered particularly relevant to the vocational decision-making process. It is a rare student indeed who experiences little or no difficulty in resolving the problem of occupational choice (Ginzberg, 1962, p. 268). At key stages in their life, when students should make important career decisions, some may simply ignore the problem so that, when they finally are ready to leave school, they are without definite career plans (Ginzberg, 1962, p. 269). Their failure to think seriously about the future may result from the failure of parents to understand the process of occupational choice. This lack of understanding on the part of parents is most likely to occur in families of lower socioeconomic status and lower level of education (Breton, 1972, p. 123).

The kinds of values and attitudes that children of different social classes have, play a large role in determining the differences in performance observed between rich and poor children (Jensen, 1971, p. 141). Within each social origin level, as well, the stimulation and encouragement children receive from their parents is not the same (Blau and Duncan, 1967, p. 403). Blau and Duncan (1967, p. 403) state that "it is well known that low social origins are associated with a variety of factors that have adverse effects on occupational chances." The future occupational chances of children of low social origins is hampered as well by the limited access to information regarding possible careers and by their lack of adequate

role models.

The size of the community in which the student lives is also expected to be a factor contributing to his ability to make an occupational choice. The fundamental argument is that students from larger communities and towns will have greater acquaintance with, and more knowledge of, the broad spectrum of occupational possibilities that exist than will students from smaller communities (Sewell & Orenstein, 1965), and will thus be in a better position to make occupational decisions. This notion is also supported by Lazarsfeld (1962) and Lipset (1955).

Mental Ability

Children who differ in intelligence also differ in the way in which they approach and handle tasks. In particular, they differ in their modes of selecting, classifying, and generalizing from the information in a given situation (Boocock, 1972, p. 108). It seems reasonable, therefore, to believe that children who differ in IQ will also approach and respond to the problem of career selection in rather different ways.

The relationship between social background and measured mental ability is a widespread phenomena, documented by an extensive literature; see, for example, Eckland (1967), Jensen (1969), Sewell and Shah (1967), Sewell et al. (1969). Blau and Duncan (1967, p. 326) report that the relationship between measured IQ and socio-economic status is in the neighbourhood of .5. However, the causal relations between them is not of concern here as both variables are considered exogenous.

EXPERIENTIAL FACTORS

School Experiences

There is evidence, notably in Coleman et al. (1966), that certain

characteristics of a school, certain school experiences, do matter, and matter more for some students than others. The impact of certain school experiences considered salient in the career decision-making process are being examined in this study.

"In many ways the school, as an academic and social system, is partly responsible for the vocational problems of an adolescent" (Breton, 1972, p. 89). What happens to him in school, in other words, can be expected to affect the process of formulating a career goal. The experience, or lack of it, of choosing between programs; the differences between those who succeeded or failed; these factors play an important part in the career development of an adolescent because they constitute an important source of clues to the kind of role and status he is likely to occupy in the social structure (Breton, 1972, p. 390).

Family Experiences

The extent of home and family influence is emphasized in such well known reports as Coleman et al. (1966), Campbell (1970), the Plowden Report (1967). Bernstein (1961) sees the "restricted language code" as a major cause of difficulty for lower class children.

If a student has had the opportunity to learn, in his family situation, ways of dealing with other people and with his environment, he will then develop "habitual" methods of dealing with such problems as the choice of a career (Holland, 1966). Breton (1972, pp. 80-81), in this regard, says:

Parental control in the family is important for vocational development because not only is it related to the acquisition of decision-making experience, but also has a bearing on an individual's attitudes towards himself and the extent to which he is autonomous in decision-making . . . there is also a greater chance that they will feel that they have little control over the course

of events, have worries about finding a job after their education is complete, and be dependent in decision-making.

Experiential Factors as Intervening Variables

A large part of the effect of the Social-Structural Influences and Mental Ability is expected to be mediated through the intervening variables: Family Experiences and School Experiences. The direct effect, that is, the effect of the background factors not mediated by the other variables in the model, is likely to be small considering all the intervening variables. The effect of these background factors on the home and school factors will now be considered.

Social Structural Influences Upon Family Experiences. Hyman (1953, p. 438) found that higher status parents were more likely to perceive college education as essential to advancement, and to plan it for their own children, while among lower socio-economic status parents there was "... reduced striving for success . . . an awareness of the lack of opportunity, and a lack of valuation of education." This difference in class value will be communicated to the child through the degree of support given by his parents for educational and occupational success.

Families that enjoy economic and social advantage, that is, upper or middle class families, value obedience and self direction in their children, but place greater emphasis on the latter. Lower class, or working class people, in contrast, place much greater emphasis on obedience and are less concerned with self direction (Elkin & Handel, 1972, p. 75). Thus, a path is indicated from Social Structural Influences to Family Experiences.

Social Structural Influences Upon School Experiences. The relationship between status and a number of school related variables is well

documented; see, for example, Clark (1962) and Sewell et al. (1957). This relationship seems to hold no matter what measure of status is used--occupation of father, family income, parents' education, or some composite measure of these. These social structural factors affect such things as course failure, truancy, dropout rates, college plans, elective school offices, and extent of participation in extra-curricular activities (Boocock, 1972, p. 36). Coleman et al. (1966, p. 188) says "Schools bring little influence to bear on a child's development that is independent of his background and social context."

Mental Ability Upon Family Experiences. It has already been argued that vocational decision-making is a complex process, and one's ability to handle all the pertinent factors is possibly related to the level of intelligence. Sewell and Shah (1968) demonstrate the effect of mental ability on parental encouragement, and show parental encouragement as an intervening variable between mental ability and educational aspirations. The substantive meaning of this relationship seems to be that parents encourage bright children, while the less capable child, who is perhaps more in need of encouragement and support, does not receive the same degree of support.

Mental Ability Upon School Experiences. A review of evidence on the relationship between IQ and achievement by Rossi (1961) concludes that the former accounts for between forty and sixty percent of the variance in student performance. In the conventional classroom, where the major emphasis is on performance, or the building up of repertoires of factual information and analytic skills (Boocock, 1972, p. 118), differences in IQ are bound to be associated with differences in school experiences.

Attitudinal Factors

Korman (1966) showed that people with low self esteem formulate career plans less in line with their objectively measured abilities than do those with a positive image of themselves. Breton (1972) found an association between the experience of difficulty in the formulation of a career goal and some degree of rejection of the individual of himself. Rosenberg (1965) showed that adolescents with low self esteem are less likely to expect success in their future careers. Variance in attitude, then, seems to be associated with vocational decision-making; a path is thus indicated from Attitudes to Career Choice.

Attitudinal Factors as Intervening Variables

Family Experience Upon Attitudes. Douglas (1964, p. 89) concludes that "the attitude of children . . . is deeply affected by the degree of encouragement their parents give them. . . ." In this regard, as well, the Plowden Report (1967, p. 89) says:

Before the inquiry, it was plain, as a matter of common observation, that parental encouragement and support could take the child some way. What the inquiry has shown is that 'some way' can reasonably be interpreted as 'a long way' and that the variation in parental encouragement and support has much greater effect than either the variation in some circumstances or the variation in schools. . . . If the least co-operative parents rose to the level of the most co-operative the effect would be much greater than if the worst schools rose to the level of the best or the least prosperous parents to the level of the most prosperous, because the effect of the range in co-operation is much greater than the effect of the range in parental prosperity of that of the range in schooling.

This survey also showed that the relative importance of parental encouragement and support increases as the child grows older.

School Experience Upon Attitudes. Schools often contribute to poor

self attitudes by labelling children as "slow" or designating them as "failures." By continually subjecting the student to a series of events that are totally beyond his control, that is, by making no allowance for personal choice, the school may be fostering feelings of personal inefficacy.

Schools may as well be the source of a parent's attitude towards his children's academic ability; teachers, by their communications to parents, probably have a great impact on student's self concepts.

Mental Ability Upon Attitudes. Higher levels of intelligence are associated with more frequent successes in school; these in turn are associated with better self attitudes (Coppersmith, 1967, p. 128). If this linkage is correct, then intelligence is not likely to have striking consequences unless it eventuates in performance, which it usually does. In this respect the individual's academic average might be a better indicator of his self attitude. Since, however, an objective report of academic average was not available, measured IQ will be used, bearing in mind this limitation.

Sex as a Variable

The most important part of the future as far as many people are concerned is the social level the individual will occupy as an adult. For men this is determined to a great extent by the occupation they follow; for women it is usually defined by the occupation of their husbands (Kerckhoff, 1972, p. 103).

The most salient value pertaining to women's cultural heritage, according to Coser and Rokoff (1971, p. 542), is that they expect men to be the caretaker of the family, whose prestige is determined by a man. Career and family life are presented as mutually exclusive alternatives

for women. As a consequence, women are hard put to avail themselves, as men do, of the opportunities that an occupation can offer.

Employment discrimination on the basis of sex is widespread, and may be explained as a result of a distinctive system of stratification by sex (Collins, 1971, p. 3). The image of the supportive role of women is carried over into the school, and is particularly noticeable in physical activities, when boys bring prestige to the school by their performance in sports and athletics, and the girls act as cheerleaders.

Sewell and Shah (1967; 1968) present evidence of sex differences in the effects of socio-economic status, intelligence, and parental encouragement on aspirations. Turner (1964, p. 284) says "never to attempt to compare the level of man's with woman's socio-economic goals or ambitions by comparing levels of educational and career aspirations;" they mean different things to a man and to a woman.

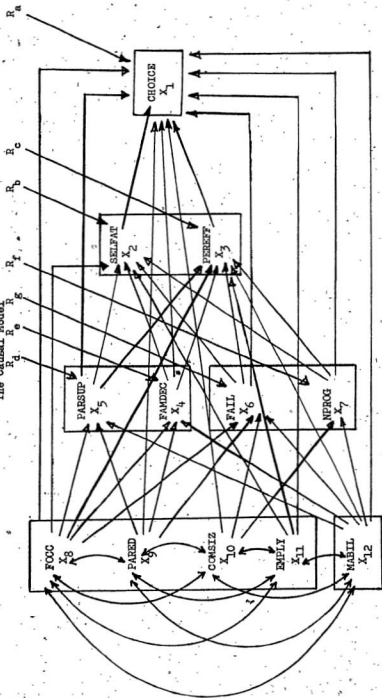
Significant changes have taken place in recent years as to what is masculine and what is feminine. Male and female roles are becoming less rigidly differentiated, the boundaries between them more permeable (McNeil, 1969, p. 68). With the increased participation of women in the work force this variable is perhaps of less importance today than it has been. However, sufficient differences in sex roles are expected to still maintain in this province to warrant consideration of the causal relations in the model separately by sex.

THE SPECIFIC PATH MODEL

The particular model proposed by this paper is presented on page 25. Single headed arrows represent the hypothesized cause-effect relationships, the effects lying at the heads of the arrows. The double headed,

FIGURE 2

The Causal Model



The grouping of variables in this model corresponds to the structure of the general causal model presented on page 20.

curved arrows represent a correlation among predetermined variables, and an explanation of these correlations is taken to be outside the scope of this paper.

The twelve variables of the model are:

- X₁, the degree to which the respondent has been indecisive about the choice of a career;
- X₂, the respondent's self attitude, or ideas about his life chances as an individual;
- X₃, the respondent's sense of personal control over events, or his sense of personal efficacy;
- X₄, the degree to which the respondent participates in the decision-making process of his family;
- X₅, the degree to which the respondent's parents show concern for and interest in his school work;
- X₆, a dichotomous variable which indicates whether or not the respondent has experienced academic failure during his high school years; that is, if he has failed a year;
- X₇, also a dichotomous variable, which indicates whether the respondent has chosen his own high school program, or was placed into it by the school;
- X₈, a background variable which is a rating of the father's occupation according to the Blisshen scale;
- X₉, a composite of the highest grade of school or college completed by both parents;
- X₁₀, the size of the community in which the respondent resides;
- X₁₁, the degree of occupational stability experienced by the respondent's father;

X_{12} , the respondent's measured mental ability or IQ score.

Hypothesized Relationships

This section deals with some of the relationships in the model not specifically dealt with in the section called The Theoretical Model.

Starting from the left of Figure 2, a positive correlation is assumed to exist between the occupational status, or socio-economic status as determined by the occupation of the student's father, and the education level of his parents. Occupations that require a lot of schooling generally have more prestige than occupations that require very little schooling. In many studies, for example, Blishen (1967), Duncan (1961), Klatsky and Hodge (1971), education level and occupation are used to construct a single status measure. However, the rather unusual distribution of occupations in Newfoundland (in 1961 18.2 percent of the male labour force were fishermen, loggers, or miners, as compared to the Canadian average of 3.2 percent (Breton and McDonald, 1967, p. 124)), would seem to indicate that a very large proportion of Newfoundlanders enjoy little status. While this may be true to a certain extent, it fails to recognize the special status conferred on such people as longliner owners, crew skippers, and prosperous fishermen. The composite measures of status ordinarily employed might therefore not be advisable for Newfoundland.

People in occupations with high prestige ratings (high socio-economic status) such as doctors, lawyers, and other professionals, do not experience unemployment and job shifts as do people in low prestige (low socio-economic status) occupations such as fishing, logging, or mining (Blau and Duncan, 1967, p. 103). A relationship is expected, therefore,

between father's occupation, X_8 , and his employment stability, X_{11} . Because of the availability of alternate occupational opportunities in larger centres as compared to small communities, a relationship is expected between father's employment stability and community size, X_{10} . Similarly, the restricted occupational opportunities available in small communities, or the narrower range of jobs, plus the fact that jobs available in small rural communities are usually low status type jobs, seems to indicate a relationship between father's occupation and community size.

While the correlations among the five variables included in model as background variables will be measured, they will remain unanalysed, that is, the variables will be considered exogenous, or pre-determined. The bi-directional curved arrows merely serve to sum up all sources of correlation between them, and to indicate that the explanation thereof is not part of the problem at hand (Duncan, 1966).

Community size is also expected to determine the number of programs available in the school (the larger the community, the larger the school, and thus the more programs available) and thereby determine if the student will have the opportunity to choose a program of study. It seems reasonable to expect that if a student has had the experience of choosing his high school training program, he will find it easier to formulate a career goal. A path is therefore included from Number of Programs, X_7 , to Career Choice, X_1 .

The uncertainty of the child which results from the ambiguous and unsettled conditions of unemployment is expected to be reflected in his inability to make major decisions such as the choice of a career; hence, the direct path ($p_{1,11}$) from Employment Stability, X_{11} , to Vocational Indecision, X_1 .

A student who sees his father frequently thrown out of work, or having to change from one job to another, is likely to get the impression that an individual's own efforts are inconsequential, and that the outcome of a situation depends either on someone else's decisions or on an impersonal series of events (Breton, 1972, p. 107). A relationship is thus anticipated ($p_{3,11}$) between Father's Employment Stability, X_{11} , and Personal Efficacy, X_3 .

If a student finds that his activities in school have had no significant consequences, that is, if he has failed, then he is likely to feel that the outcome of a situation or series of events is beyond his control. This notion of control over future events was first developed by Rotter (1954). The relationship between the Experience of Failure, X_6 , and the feelings of Personal Efficacy, X_3 , is indicated by the path p_{36} . Breton (1972, p. 51) says in this regard:

The sense of powerlessness about the future . . . feelings that reflect a low sense of control over the course of events and that an individual's present activities are not relevant to what lies ahead . . . are associated with vocational indecision.

Thus, a relationship (p_{13}) is hypothesized between Personal Efficacy, X_3 , and Career Choice, X_1 .

Heckhausen (1967) suggests that the effect of the experience of failure is the subsequent fear of future failure, that is, a high level of anxiety about the ability to succeed. Halloran (1967, p. 35) in this regard says

when we experience disappointments or failures . . . it is likely that unfavourable attitudes will develop, or already existing unfavourable attitudes will be intensified. . . .

The experience of failure, or a succession of failures, it seems, might be generalized into an overall sense of unworthiness, so a path (p_{26}) is

indicated from Experience of Failure, X_6 , to Self Attitude, X_2 . Hypothetically, the experience of failure would also tend to have a disruptive influence on the process of vocational decision-making (p_{16}) in that a student would have to adjust or lower the standards he has already set himself.

In our society which emphasizes a person's ability to achieve and produce, the father who has difficulty in this regard might be considered a failure (Komarousky, 1967, p. 88). For the purpose of this study it is assumed that fathers who are unemployed for considerable lengths of time tend to feel that they are unsuccessful and are apt to communicate this feeling to their children; this is indicated in the model by the path ($p_{2,11}$) from Employment Stability, X_{11} , to Self Attitude, X_2 . In addition, extended or frequent unemployment is likely to evoke sympathy, pity, or derision from the local community, further subverting the child's confidence (Wadel, 1973, p. xii).

Some of the hypothesized cause-effect relationships in the model remain unsupported. However, they have been dealt with in a general way in the section of this paper entitled The General Model, so that at the risk of tedium no attempt will be made at the justification of the remaining relationships in a more specific manner.

Beyond the arguments presented above, there seems to exist a plausible temporal order among the variables. The basic argument for putting the Background Factors ($X_8, X_9, X_{10}, X_{11}, X_{12}$) causally prior to the other variables is expressed in the dictum "behavior is a function of the person in his situation," or, as Haller and Portes (1973, p. 73) put it "the context in which an action takes place affects the outcome." The Present Experiences (X_4, X_5, X_6, X_7) which a student will have is therefore

expected to be affected by these factors of his background.

"The content of an attitude is," according to Halloran (1967, p. 29), "very largely provided by the culture and subcultures in which the individual participates." Attitudes are learned and developed in interaction, in relationships with other people, and by the experiences of everyday life. It seems reasonable, therefore, to place the attitudinal variables after the background and experiential factors.

Not all the possible causal linkages have been included in the model, only those that, from a review of the literature and a consideration of the peculiarities of the Newfoundland situation, seem relevant. Indeed, after the strengths of the correlations among all the variables have been observed, some of the hypothesized causal paths may well have to be abandoned, and some included that are not hypothesized. The technique being adopted is that used by Duncan (1966), to include initially all the paths possible under the terms of the model, and then to refine the model, deleting paths that are not statistically significant.

CHAPTER III

METHODOLOGY

PATH ANALYSIS

The procedure being used in the quantification of the causal model is a generalization of multiple linear regression to systems of causal relations and is known as path analysis. This procedure was developed by the geneticist Sewall Wright, and in the words of Wright, path analysis is

a method of measuring the direct influence along each separate path in . . . a system and thus of finding the degree to which variation of a given effect is determined by each particular cause. The method depends on the combination of knowledge of the degree of correlation among the variables in a system with such knowledge as may be possessed of the causal relations.

(Wright, 1921, p. 557)

The relationships are assumed to be linear, asymmetrical, and additive; each "dependent" variable is regarded as being completely determined by some combination of variables in the system, plus disturbances that arise outside the system.

In the system of relationships as presented in Figure 2 on page 25 of this paper, the total variation of the predetermined variables (X_8 , X_9 , X_{10} , X_{11} , and X_{12}) is assumed to be caused by variables outside the set under consideration. This type of variable is referred to as exogenous. These exogenous variables may be correlated among themselves; however, the explanation of their intercorrelations, although they are being measured, is not part of this study, and is not a problem for the system under

consideration. The remaining five variables are considered endogenous, and, in contrast to the exogenous variables, the total variation of the endogenous variables is assumed to be completely determined by some linear combination of variables in the model. This principle allows a particular endogenous variable, say X_2 (Figure 2), to be dependent on both endogenous variables (X_4, X_5, X_6, X_7) and exogenous variables (X_8 and X_9). But since any of the endogenous variables on which a given endogenous variable is dependent, is ultimately dependent on some exogenous variable(s), the given endogenous variable is ultimately determined by the exogenous variables of the model. Where the variation of a particular endogenous variable is not completely accounted for by prior (exogenous or endogenous) measured variables, a residual variable (R_a, R_b, \dots, R_g) is introduced to account for the variance of the endogenous variables not explained by measured variables. The magnitude of the path coefficient for the residual is calculated as the square root of $1 - R^2$ (Land, 1969, p. 20).

The causal model shown in Figure 2 represents a special case of path analysis, and in this case path analysis amounts to a sequence of conventional regression analyses. The path coefficients are "standardized partial regression coefficients" in a regression setup (Duncan, 1971, p. 122). The calculation of path coefficients is based on product-moment correlations. In this study each correlation is based on all cases for which data was available, and hence the correlations are based on somewhat different numbers of cases. It is assumed that non-response for each variable is randomly distributed, that there is no systematic effect arising from non-response.

Assumptions

Values for the path coefficients can be obtained only if certain simplifying assumptions are made. Briefly, these assumptions are as follows:

- (1) change in one variable always occurs as a linear function of change in other variables;
- (2) the relationships within the model are asymmetrical, that is, are characterized by one-way causation;
- (3) the causal priorities in the model are as they have been argued for;
- (4) the measuring instruments used to obtain the data have high reliability;
- (5) all the system inputs have been specified so that they can be considered explicitly in the analysis;
- (6) the usual assumptions of multiple linear regression are met. See Johnson (1963, pp. 106-108) or Heise (1969, pp. 44-57) for a statement of these assumptions.

Assumption of Interval Type Data. An exception to the last assumption (No. 6 above), having to do with the type of measurement used, should be made at this time.

While path analysis has great advantages for bridging the gap between sociological theory and statistical analysis, a major obstacle, according to Boyle (1969) is the requirement that interval scales be assumed for the data. Boyle suggests a technique (the use of dummy variables) for checking on the results of assuming interval scales, and concludes that "the empirical dangers of assuming equal intervals are not

great" (Boyle, 1969, p. 461). Blalock (1964) points out that it is perhaps too early to estimate the distortion introduced into a model by assuming interval properties of our measures. Nevertheless, he concludes that in the absence of an alternative rationale in the case of ordinal scales, we can presume that interval techniques should yield conclusions under the identical causal model.

(Blalock, 1964, p. 35)

Labovitz (1970) points out that the linear scoring system results in a small amount of error no matter what the "true" scoring system may be. He also shows that, if the problem calls for analytical techniques such as correlation or regression, the ordinal categories may be assigned numbers. Labovitz (1970) further asserts that ordinal variables can be treated as if they conform to interval scales. He had a computer generate eighteen scoring systems, and the scoring systems resulted in negligible error when any assigned scoring system was compared with any "true" scoring system. Some of the advantages Labovitz gives for treating ordinal variables as though they conformed to interval scales are:

- (1) the use of more powerful, sensitive, better developed and interpretable statistics with known sampling errors;
- (2) the retention of more knowledge about the characteristics of the data; and
- (3) greater versatility in statistical manipulation, for example partial and multiple regression. (Labovitz, 1970, p. 515)

These arguments have been taken as sufficient justification to treat the ordinal type variables in the model presented in this paper as if they conformed to interval scales.

The Path Model

The path model presented in this paper is drawn according to the

following conventions:

- (1) The causal relations among the variables are represented by unidirectional arrows extending from each determining variable to each variable dependent on it.
- (2) The postulated correlations between the exogenous variables of the model are shown by double headed curved arrows, to distinguish them from causal arrows.
- (3) Residual variables are represented by single headed arrows leading from the residual variable to the dependent variable; literal subscripts are attached to the residual symbols to indicate that these variables are not measured.

The system as represented by Figure 2 is called a "recursive" system, as contrasted with a system in which there may be reciprocal causation, and can be represented by a matrix of structural equations, where

- X_{12} = mental ability
- X_{11} = father's employment stability
- X_{10} = community size
- X_9 = education level of parents
- X_8 = father's occupation
- X_7 = number of programs available in the school
- X_6 = experience of failure
- X_5 = participation in family decision-making
- X_4 = parental support
- X_3 = sense of personal efficacy
- X_2 = self attitude
- X_1 = vocational indecision

p = the path coefficient representing the magnitude of the cause-effect relationship. The subscripts specify the two variables in question, for example, p_{18} represents the magnitude of X_8 as a cause of X_1 .

R = a residual term whose magnitude will indicate the effects of variables outside the system on a particular dependent variable.

The following set of equations represents the system of hypotheses represented in Figure 2:

$$X_1 = p_{18}X_8 + p_{19}X_9 + p_{1,10}X_{10} + p_{1,11}X_{11} + p_{1,12}X_{12} + p_{15}X_5 + p_{14}X_4 \\ + p_{16}X_6 + p_{17}X_7 + p_{12}X_2 + p_{13}X_3 + p_{1a}R_a$$

$$X_2 = p_{28}X_8 + p_{25}X_5 + p_{24}X_4 + p_{2,11}X_{11} + p_{26}X_6 + p_{27}X_7 + p_{2b}R_b$$

$$X_3 = p_{35}X_5 + p_{38}X_8 + p_{34}X_4 + p_{3,11}X_{11} + p_{36}X_6 + p_{3,12}X_{12} + p_{37}X_7$$

$$X_4 = p_{48}X_8 + p_{49}X_9 + p_{4,12}X_{12} + p_{4e}R_e$$

$$X_5 = p_{58}X_8 + p_{59}X_9 + p_{5,12}X_{12} + p_{5d}R_d$$

$$X_6 = p_{68}X_8 + p_{69}X_9 + p_{6,10}X_{10} + p_{6,12}X_{12} + p_{6g}R_g$$

$$X_7 = p_{7,10}X_{10} + p_{7,12}X_{12} + p_{7f}R_f$$

The use of subscripts follows convention in this regard: The first subscript identifies the dependent variable; the second, the variable whose direct effect on the dependent variable is measured (Duncan, 1966, p. 4); $p_{18}X_8$, for example, measures the direct effect of X_8 on X_1 .

Standardized Versus Unstandardized Regression Coefficients

This study is designed to allow inferences to be made about sex differences in the vocational decision-making process. The discussion must consider then not only the relationships within the basic model, but also comparisons of two models—one for boys and one for girls. For the former

(the within group relationships) the standardized regression coefficient will be used; for the latter, the unstandardized regression coefficient seems most appropriate (Blalock, 1971).

Variation in any variable in the model, as has already been argued, is a function of variation in other variables in the model, peculiar to the particular population under study. However, when comparing the relationships between two groups (males and females), it is entirely possible that the relative magnitudes of the correlations could differ, while the standardized regression coefficient remains the same. As long as one is dealing with a single set of data, the use of standardized regression coefficients will not be misleading; whenever it is necessary to make comparisons, however, the unstandardized regression coefficient will be used (Blalock, 1971, p. 150):

The Identification Problem

The causal model presented in this paper is said to be "over-identified," that is, there are more correlation coefficients than there are path coefficients (Turner & Stevens, 1971, p. 86). In Figure 2 the paths from Community Size (X_{10}) to Parental Support (X_3) have been deleted, suspecting on the basis of current literature that these variables are not very consequential. Each time an arrow between a pair of variables is omitted, the prediction is made that the path coefficient is zero except for sampling errors. However, the real issue is not whether the omitted variables really have zero coefficients, but rather whether this is sufficiently so in an approximate sense. The proposed model is only an approximation to reality; of necessity it abstracts from the real world by limiting the number of variables included in each equation and in the system as a

whole.

To test the mathematical adequacy of this model after the paths which are not statistically significant have been deleted, the correlation matrix will be reproduced. The equation used to derive each correlation is as follows:

$$r_{ij} = \sum_q p_{iq} r_{jj}$$

where r = correlative coefficient

p = path coefficient

i = the number of the dependent variable

j = the number of the independent variable

q = an index of all numbers between j and i, including j.

(Spady & Greenwood, 1970, p. 6)

CHAPTER IV

THE PROCEDURE

POPULATION AND SAMPLE

In 1965 a Career Decisions Project was initiated with the co-operation of the Federal Department of Labour and with the Provincial Departments of Education. Two reports have emanated from the study: Breton and McDonald (1967) and Breton (1972). Included in the study were schools in each of the ten provinces, both small and large, rural and urban schools, and schools of different types--academic, technical, vocational, commercial, etc. The Newfoundland sample consisted of 38 secondary schools out of the total of 425 secondary schools in the province (8.9 percent of the total), and 6,786 secondary school students out of the total secondary school enrollment in Newfoundland of 24,664 (27.5 percent of the total). This study proposes to look at the 1,597 Grade Eleven students (approximately 27 percent of the total enrollment) included in the Newfoundland sample.

The sample of schools in the Breton and McDonald study was designated as a stratified probability sample. The basic criteria for stratification were: (1) Province, (2) Type of School, (3) Size of Community, and (4) Size of School by Enrollment. All secondary school students enrolled in the schools selected were considered part of the sample.

For a more detailed description of the sampling technique see

Breton and McDonald (1967, pp. 5-8).

INSTRUMENTS

The primary instrument was a questionnaire to be filled out by all students in the secondary schools in the sample. For details of the questionnaire, see Breton and McDonald (1967, pp. 189-203) or Breton (1972, pp. 409-440). The questionnaire was accompanied by a brief intelligence test. The test administered was the Otis-Lennon Mental Ability Test (1965).

OPERATIONAL PROCEDURE

In the winter and spring of 1965, before beginning the collection of data for the main study, a pre-test, or pilot study was carried out in fifteen schools not in the sample. The selection of schools for the pre-test followed the same procedure as that covered in the large scale research. The purpose of the pre-test was to test the research instruments, and to modify and amend them on the basis of the findings.

The administration of the revised questionnaire for the main study was carried out with the co-operation of the Department of Education and the School Boards which operated in the sample. In the autumn of 1965 the teachers in the sample administered the questionnaire to their home room classes. The research involved a second questionnaire, administered by the same teachers to their classes in May of 1966. The second questionnaire contained both questions repeated from the first questionnaire and a number of additional questions.

OPERATIONALIZATION OF THE VARIABLES

The following is a description of the variables used in this study.

Where categories were combined or re-ordered for the analysis, this has been indicated.

Vocational Indecision (Questions D-6, D-8, D-17, and D-18)

- Q. (D-6) When you finish your education, what type of work or occupation will you be most qualified to go into?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	No particular type of work or occupation	2
2	Have not thought much about it	2
3	Don't know	2
4, 5, 6	Write in the occupation on your mind	1

- Q. (D-8) If you had your choice, what type of work or occupation would you like to have most as a career?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	No type of work or occupation in particular	2
2	Have not thought much about it	2
3	Not sure	2
4, 5, 6	Write in the occupation on your mind	1

- Q. (D-17) Did you have this career in mind before or after you got into the present programme or course of study?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	Before	1
2	After	1
3	I have not chosen my programme of study or career yet	2

Q. (D-18) How sure are you about what you will do as a career?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	Very sure	1
2	Fairly sure	2
3	Not too sure	3
4	Not sure at all	4
5	I have not thought much about my career yet	4

Principal component analysis, see Rummel (1970, p. 112) or Nie et al.

(1970, pp. 207-224), was used to analyse the intercorrelations among these variables. This procedure yielded the factor loadings displayed in Table 2. A factor loading is, according to Rummel (1970, p. 108), "a weight for each factor dimension measuring the variance contribution the factor makes to the data vector." Besides producing the loadings, this procedure also generated factor scores which gives a score for each individual on each of these factors, and was used to produce a composite score measuring what the variables have in common, or the underlying dimension referred to in this study as "Vocational Indecision."

TABLE 1
CORRELATION MATRIX FOR VOCATIONAL
INDECISION VARIABLES

	D-6	D-8	D-17	D-18	Mean	Std. Dev.
Question D-6	1.00				1.30	.79
Question D-8	.57	1.00			1.39	.46
Question D-17	.38	.32	1.00		1.00	.34
Question D-18	.44	.46	.45	1.00	2.06	.93

TABLE 2
PRINCIPAL COMPONENT ANALYSIS: VOCATIONAL
INDECISION VARIABLES

	Factor Loadings	Factor Score Coefficients
Question D-6	- .79	- .34
Question D-8	- .78	- .34
Question D-17	- .68	- .30
Question D-18	-.77	- .34

The following equation, then, was used to produce a measure of vocational indecision:

$$\text{Vocational Indecision} = (-.34 * D-6) + (-.34 * D-8) + (-.30 * D-17) + (-.34 * D-18).$$

Self Attitude (Questions D-36 and F-22)

Self Attitude is an attempt to measure the student's self esteem or self image; the measure being used is the additive combination of the following questions:

Q. (D-36) If my family were of a different social class, I would have a better chance of getting ahead in life.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q. (F-22) Even with a good education, a person like me will have a tough enough time getting the job he wants.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Personal Efficacy (Questions E-1, E-5, and E-10)

The score on personal efficacy was obtained by the additive combination of the responses to the following questions. This treatment follows that used by Breton (1972) in dealing with the same variable.

- Q. (E-5) When a man is born, the success he's going to have is already in the cards, so he might as well accept it and not fight against it.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

- Q. (E-1) Making plans only makes a person unhappy because plans hardly ever work out anyway.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

- Q. (E-10) Good luck is more important than hard work for success.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Parental Support (Questions G-16, G-17, G-18, and G-19)

- Q. (G-16) How much would you say your father knows about your work in school?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	A great deal	3
2	A fair amount	2
3	Very little	1

- Q. (G-17) How much would you say your mother knows about your work in school?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	A great deal	3
2	A fair amount	2
3	Very little	1

Q. (G-18) How often would you say your father praised you for your accomplishments?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	Very often	4
2	Quite often	3
3	Not too often	2
4	Almost never	1

Q. (G-19) How often would you say your mother praised you for your accomplishments?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	Very often	4
2	Quite often	3
3	Not too often	2
4	Almost never	1

Principal component analysis, as described with reference to the variable "Vocational Indecision," was used to analyse the intercorrelations among these variables and to construct a measure of parental support. Table 3 shows the intercorrelations among the variables, and Table 4 shows the factor loadings and factor scores used to construct the composite index of parental support.

TABLE 3
CORRELATION MATRIX FOR PARENTAL
SUPPORT VARIABLES

	G-16	G-17	G-18	G-19	Mean	Std. Dev.
Question G-16	1.00				1.96	.66
Question G-17	.56	1.00			1.19	.65
Question G-18	.42	.29	1.00		2.46	.85
Question G-19	.21	.31	.57	1.00	2.75	.81

TABLE 4
PRINCIPAL COMPONENT ANALYSIS:
PARENTAL SUPPORT VARIABLES

	Factor Loadings	Factor Score Coefficients
Question G-16	- .75	- .34
Question G-17	- .73	[.33
Question G-18	- .78	[.36
Question G-19	- .70	- .32

The following equation was used to produce a measure of parental support:

$$\text{Parental Support} = (-.34 * G-16) + (-.33 * G-17) + (-.36 * G-18) \\ + (-.32 * G-19)$$

Family Decision-Making (Questions G-13 and G-14)

The degree of participation in family decision-making was measured by adding the responses to the following questions:

- Q. (G-13) How much influence would you say you have in family decisions affecting yourself?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	A lot of influence	3
2	Some influence	2
3	None at all	1
4	Don't know	1

- Q. (G-14) If a decision is made at home that you don't like, do you feel free to complain, do you feel a little uneasy about complaining, or is it better not to complain?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	Feel free	3
2	Feel a little uneasy	2
3	It is better not to complain	1

Experience of Failure (Question F-16)

Experience of Failure was considered dichotomous, indicating whether or not the student has failed a year in high school. This, of course, is the student's own reporting of his academic success or failure, and as such might tend to be biased towards showing the student as having had more success at school than is actually the case. However, no other indicator was available, and this, therefore, has to be taken as one of the limitations of the study.

Q. (F-16) Have you failed a year or skipped a year in high school?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	Failed a year	1
2	Skipped a year	2
3	Neither	2

School Program (Question A-1)

School Program indicates by the number of programs available, if the student has had some choice of school programs. In Newfoundland there will be a minimum of one and a maximum of three programs; and the number available to each student will be found by adding the responses to the following question:

A (A-1) At the bottom of this page you will find lists of programs or courses of study offered in the different provinces. Find the list for your province and indicate all the programs or courses offered in your school. Mark as many spaces as apply.

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
	NEWFOUNDLAND	
3	Commercial	1
3	Matriculation (Univ. prep.)	1
3	Trade (General)	1

Father's Occupation

The student's socio-economic status was measured by the occupational status of his father (Question G-1). The responses in the original data were categorized using the Occupational Classification Manual (1961) of the Dominion Bureau of Statistics. However, for the purpose of this study, the occupations were re-coded according to the socio-economic index of Canadian occupations produced by Blisshen (1967).

- Q. (G-1) What is your father's occupation? (Indicate it as accurately as you can, using two words if possible, for example write "shoe salesman" instead of just "salesman;" or write "electrical engineer" instead of just "engineer." If he is deceased, write in what his occupation was.)

Parents' Education (G-6, G-7)

Parents' Education is a composite measure of the highest grade of school or college completed by both parents. The measure was obtained by adding the responses to the following two questions:

- Q. (G-6) How far did your father go in school? (Mark only the last school that he attended.)

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	None	1
2	Elementary school	2
3	Some high school	3
4	Finished high school	4
5	College or university	5
6	Post-secondary technical school	5
7	Teachers college or normal school	5
8	Agriculture college or institute	5

9	Business or commercial college	5
10	Other	5
11	Don't know	1

Q. (G-7) The same as G-6 above is asked in reference to the mother's education.

The same problem arises here as with regard to variable X_2 , that is, the reliability of the student's reporting. However, it seems that Grade Eleven students should be reasonably accurate in reporting their parents' education, and any bias towards favourably reporting of parents' education must be considered a limitation of the study.

If a student reports that he does not know how much education his parents have, then chances are that these parents have very little or no education. This data showed, according to the students' reporting, that 1.4 percent of the fathers and 0.6 percent of the mothers had no education. In a province where the illiteracy rate is double the national average and 47 percent of those over age 25 have less than grade five education (Kitchen, 1969, p. 1), this figure seems unrealistic. For these reasons, then, the "Don't know" response (coded 11) has been re-coded with the "None" category (coded 1).

Community Size

The community of residence of each student has been categorized as: (1) Small, up to 1,000; (2) Medium, 1,000 to 10,000; (3) Large, 10,000 and up. It should be pointed out that "community of residence" refers to the location of the school the student attended, which differs, in some cases, from the home community.

Employment Stability (G-3 and G-4)

This variable indicates, by measuring the amount of unemployment and the frequency of job changes, the employment stability of the student's father.

- Q. (G-3) How much unemployment, if any, has your father experienced over the past two or three years?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	None at all	5
2	Once or twice for short periods	4
3	Frequently for short periods	3
4	For long periods of time	2
5	Most of the time	1

- Q. (G-4) When was the last time your father changed jobs?

<u>Original code</u>	<u>Response ordering on questionnaire</u>	<u>Re-order code</u>
1	During the last year	1
2	About 1 or 2 years ago	2
3	About 3 or 4 years ago	3
4	About 5 or more years ago	4
5	Always had the same job	5
6	Unemployed or retired	1

The measure of employment stability was found by summing the responses to the above two questions.

Mental Ability

The student's score on the Otis Lennon Mental Ability Test, Advanced Form (1965), was taken as the measure of his mental ability.

CHAPTER V

PRESENTATION OF THE RESULTS

This chapter contains the results of the analyses carried out in the quantification and further elaboration of the causal models presented in this study. A brief description of the tables and figures is included, but a more detailed discussion will be contained in Chapter VI.

Table 5 presents the product-moment correlations plus means and standard deviations on which all the calculations presented here are calculated. Each correlation was based on all cases for which data were available, and hence the correlations are based on somewhat different numbers of cases in each instance. The magnitude of non-response is in no case greater than 6.5 percent (the assumption of non-systematic effect of non-response has already been made).

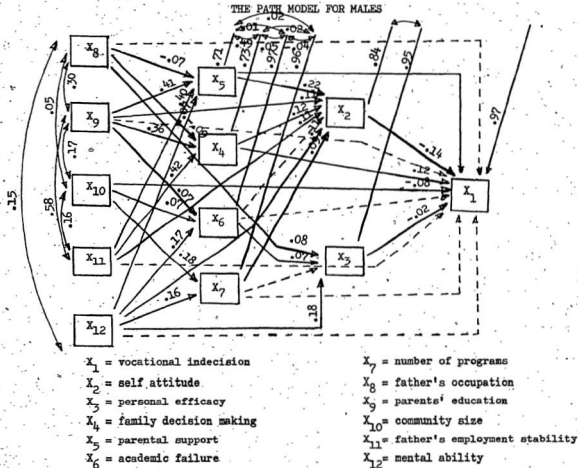
Figures 3 and 4 present the results of the series of multiple regression analyses used to estimate the magnitude of the effects in each model (this information is also contained in Tables 6 and 7). The magnitude of the effect of each cause is indicated on the path connecting the cause to its effect and is shown as the appropriate standardized partial regression coefficient. Dotted lines indicate hypothesized cause-effect relationships whose magnitude did not reach the level of statistical significance. Hypothesized relationships in which the unstandardized regression coefficient was not more than twice the standard error were deleted from the model (Duncan, 1966, p. 8 or Spady & Greenwood, 1970, p. 5). The

TABLE 5
MATRIX OF PRODUCT MOMENT CORRELATIONS SEPARATELY BY SEX

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	Mean	Std. Dev.
X ₁		-.13	-.20	-.09	-.13	.01	-.11	-.03	-.12	-.10	-.07	-.11	4.33	1.47
X ₂	-.17		.31	.42	.44	.08	.08	.08	.47	-.01	.45	.26	5.31	1.60
X ₃	-.06	.24		.24	.19	.14	.09	.12	.25	.04	.23	.36	9.55	1.80
X ₄	-.07	.42	.15		.76	-.03	.09	.01	.59	.06	.58	.25	3.97	1.94
X ₅	-.14	.44	.09	.73		-.01	.08	.06	.61	.02	.63	.22	2.55	1.31
X ₆	-.01	.10	.12	.04	.13		.06	.07	.03	.10	-.01	.22	1.65	.48
X ₇	-.07	.14	.06	.05	.05	.02		.14	.16	.43	.05	.20	1.13	.57
X ₈	-.03	.02	.12	.02	.05	.07	.07		.23	.17	.06	.22	35.70	9.49
X ₉	-.09	.41	.16	.57	.61	.13	.11	.30		.14	.61	.32	4.71	2.74
X ₁₀	-.10	.11	.09	.14	.07	.11	.21	.06	.17		.03	.13	2.50	.72
X ₁₁	-.07	.39	.14	.62	.64	.01	.02	.02	.59	.16		.20	6.72	3.46
X ₁₂	-.06	.19	.23	.12	.07	.20	.20	.15	.28	.19	.08		41.98	10.09
Mean	4.06	5.57	9.72	3.79	2.50	1.71	1.59	35.98	4.78	2.62	6.42	42.05		
Std. Dev.	1.32	1.57	1.77	2.09	1.46	.46	.75	9.91	2.99	.66	3.67	10.30		

Notes: a. Correlations for female above the diagonal; males below
b. Figure 3 provides a key to the variable names

FIGURE 3

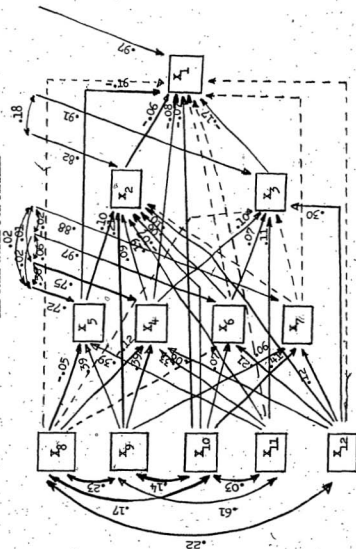


Notes: a. Five of the cause-effect relationships in this model, namely P_{29} , $P_{5,11}$, $P_{4,11}$, $P_{2,9}$, $P_{2,12}$, were not hypothesized.

b. Broken lines indicate hypothesized relationships that did not reach the level of statistical significance.

FIGURE 4

THE PATH MODEL FOR FEMALES



- X_1 = vocational indecision
 X_2 = self attitude
 X_3 = personal efficacy
 X_4 = family decision making
 X_5 = parental support
 X_6 = academic failure
 X_7 = number of programs
 X_8 = father's occupation
 X_9 = parents' education
 X_{10} = community size
 X_{11} = father's employment stability
 X_{12} = mental ability

Note: One of the cause-effect relationships in this model, namely P_{29} , was not hypothesized.

TABLE 6
PATH COEFFICIENTS (MALES)

Dependent Variables (effects)	X ₁₂	X ₁₁	X ₁₀	X ₉	X ₈	X ₇	X ₆	X ₅	X ₄	X ₃	X ₂	Residual
X ₇	.16	*	.18	*	*							.96
X ₆	.17	*	.07	.07	*							.97
X ₅	.07	.40	*	.41	-.07							.71
X ₄		.42	*	.36	-.09							.73
X ₃	.18	*	*	*	.08	*	.07	*	*			.95
X ₂	.11	.11	*	.11		.09	*	.22	.12			.84
X ₁	*	*	-.08	*	*		*	-.15	.12	-.02	-.14	.97

* Indicates a negligible direct effect

TABLE 7
PATH COEFFICIENTS (FEMALES)

Dependent Variables (effects)	X ₁₂	X ₁₁	X ₁₀	X ₉	X ₈	X ₇	X ₆	X ₅	X ₄	X ₃	X ₂	Residual
X ₇	.12	*	.41	.06	*							.88
X ₆	.21	*	.07	*	*							.97
X ₅	*	.39	*	.39	-.05							.72
X ₄	.08	.33	*	.39	-.12							.75
X ₃	.30	.11	*	*	*	*	.07	*	.10			.91
X ₂	.10	.19	-.07	.21	*	*	.06	.10	.09			.82
X ₁			-.07	*	*	*	*	-.16	-.08	-.17	-.06	.97

* Indicates a negligible effect

magnitudes of the residual effects, represented by arrows arising outside the system and pointing to each endogenous variable, were estimated as the square root of $1 - R^2$ (Land, 1969, p. 20).

The proportion of variance in each endogenous variable accounted for by the system of causal relations is presented in Table 8.

TABLE 8
PROPORTION OF EXPLAINED VARIANCE
IN ENDOGENOUS VARIABLES

	Sex	
	Male	Female
Vocational Ind., X_1	.05	.06
Self Attitude, X_2	.08	.17
Personal Eff., X_3	.29	.32
Parental Sup., X_4	.07	.21
Family Decis., X_5	.05	.05
Academ. Fail., X_6	.46	.44
No. of Progr., X_7	.50	.48

Table 9 presents the unstandardized partial regression coefficients for males and females. From these figures the differences in effect attributable to sex differences can be observed.

Finally, by examining Table 10, it is possible to determine the mathematical adequacy, or goodness of fit, of the two models. The correlations were reproduced following the procedure already outlined in this paper. Table 10 gives the differences between the original zero-order correlations presented in Table 5 and the values generated from the two

TABLE 9
UNSTANDARDIZED PARTIAL REGRESSION COEFFICIENTS

Dependent Variables (effects)	Independent Variables (causes)											
	X ₁₂	X ₁₁	X ₁₀	X ₉	X ₈	X ₇	X ₆	X ₅	X ₄	X ₃	X ₂	X ₁
X ₇	.01 (.01)	*	.14 (.47)	(.02)	*							
X ₆	.01 (.21)	**	.04 (.07)	.01	*							
X ₅	-.01 *	.15 (.16)	*	.20 (.19)	-.01 (-.01)							
X ₄	.02 (.02)	.23 (.19)	*	.25 (.27)	-.02 (-.03)							
X ₃	.03 (.05)	.04 (.05)	*	*	.02	*	*	*				
X ₂	.02 (.02)	.05 (.08)	*	(-.17)	*	.24 *	*	.26 (.20)	.10 (.06)			
X ₁	* *	*	-.16 (-.15)	*	*	*	*	-.17 (-.15)	.09 (.05)	-.01 (-.13)	.12 (-.05)	

Notes: a. * Indicates a negligible direct effect

b. The numbers in brackets refer to females

TABLE 10
DEVIATIONS OF IMPLIED CORRELATIONS FROM OBSERVED CORRELATIONS

x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}
	-.02		-.01	-.03	-.05	-.05	-.02	-.01	-.02	-.05	-.01
-.03		.00	.00	.01	.00	.05	.01	.01	.00	.02	.00
-.01	.00		.00	.02	.01	.01	.04	.03	.02	.00	.00
-.02	.01	.04		.00	.00	.00	.05	.00	.01	.00	.04
-.01	.02	.04	.00		.00	.00	.00	.00	.04	.00	.02
-.02	.01	.05	.00	.00		.00	.01	.05	.00	.05	.00
-.05	.01	.05	.00	.00	.00		.00	.00	.00	.02	.01
-.01	.05	.01	.01	.00	.02	.04		.00	.00	.00	.00
-.02	.01	.00	.00	.01	.00	.03	.00		.00	.00	.00
-.02	.00	.04	.02	.02	.00	.00	.00	.00		.00	.00
.03	.01	.02	.01	.01	.05	.02	.00	.00	.00		.00
-.02	.01	.02	.00	.00	.00	.01	.00	.00	.00	.00	

Notes: a. Males below the diagonal; females above

b. Deviation = observed correlation - implied correlation

models. The correlation between X_{11} and X_2 , for example, was calculated as follows:

$$\begin{aligned} r_{2,11} = & p_{2,11}r_{11,11} + p_{27}r_{7,11} + p_{26}r_{6,11} + p_{24}r_{4,11} + p_{25}r_{5,11} + \\ & p_{2,12}r_{12,11} + p_{2,10}r_{10,11} + p_{2,9}r_{9,11} + p_{28}r_{8,11} = (.19 \times 1.00) \\ & + (0 \times .05) + (.06 \times .01) + (.09 \times .58) + (.10 \times .63) + \\ & (.10 \times .20) + (-.07 \times .03) + (.21 \times .61) + (0 \times .06) = .190 + \\ & .000 + -.001 + .052 + .063 + .020 + -.002 + .128 + .000 = .440 \end{aligned}$$

This compares with the actual value of .45, yielding a small discrepancy of .01. In general, discrepancies above .05 are undesirable, and the number of such discrepancies in regenerated matrix must be kept minimal. (Spady & Greenwood, 1970, p. 8). Since there are no discrepancies of this magnitude in the calculated matrix, the models appear to be adequate mathematical representations of the original data matrix.

CHAPTER VI

DISCUSSION AND CONCLUSIONS

The rather large amount of information contained in the models and tables presented in the previous chapter presents some problems for the development of a meaningful discussion; for example, there are thirty cause-effect relationships to be considered in each of the two models. A consideration of each of these relationships, plus the tracing of indirect effects and the comparisons of effects between sexes, would make a detailed discussion of the results cumbersome.

In view of this the procedure adopted in this discussion will be to first of all look at the direct effects on vocation indecision of all the other variables in the two models; second, the extent to which the background factors (X_8 , X_9 , X_{10} , and X_{11}) affect the experiential factors (X_4 , X_5 , X_6 , and X_7); and third, the effect on the attitudinal variables of all the variables that precede them in the models. In addition to this, differences in effect due to sex differences will be considered.

Consider first the direct effect of the background factors on vocational indecision for both models (Figures 3 and 4). The only cause-effect relationship of significance is that involving community size (X_{10}) in the model for males, and the magnitude of this relationship (-.08) is not sufficiently large to be of much consequence. The major effects of the background variables, then, seem to be mediated through the intervening variables.

Among the set of variables designated as experiential factors (X_4 , X_5 , X_6 , and X_7), parental support and participation in family decision making both have a direct effect on vocational indecision: the former with an effect of $-.15$ for males and $-.16$ for females; the latter with an effect of $-.12$ for males and $-.08$ for females. The effect of the other two experiential factors in the models (X_6 and X_7) did not reach the level of significance necessary for their inclusion in the models as causes of vocational indecision.

Both attitudinal variables have a significant effect on vocational indecision, but the effect for females is greater. In considering the direct relationships between vocational indecision and the other variables in the models, the attitudinal variables are the only ones that show substantial sex differences.

While the magnitude of the effects of vocational indecision in both models is not substantial, this fact has not been taken as an indication of the validity of the model. The importance of a variable may lie in its elucidation of the complex process of vocational decision making. It is possible that a sizeable increase in the explanatory power of the model might be gained by adding a small number of social-psychological variables. Such a modification, however, may account to an enrichment or extension of the basic model rather than an invalidation of it.

The most important direct causes of vocational indecision in both models are parental support and the attitudinal variables; part of the effect of parental support, it should be noted, is mediated by way of the attitudinal variables. It should further be noted that in both models parental education and employment stability of the father have substantial effects on parental support. Despite the fact that the direct effect of

these two background variables is not great, they appear as important factors in the total vocational decision-making process.

An examination of the residuals in Figures 3 and 4 indicates that the greatest effect on each endogenous variable is the residual itself. In other words, the variables included in the system do not explain a great deal of the variance in each endogenous variable. However, Blau and Duncan (1967, p. 175) point out that

the size of the residual (or, if one prefers, the proportion of variance explained) is no guide whatever to the validity of a causal interpretation. . . . The relevant question about the residual is not really its size at all, but whether the unobserved factors it stands for are properly represented as being uncorrelated with the measured antecedent variables.

Both models show certain intercorrelations among residual factors. No substantive meaning can be given to these correlations, but, according to Blau and Duncan (1966, p. 186) the presence of such correlations might suggest that: (1) the model is not entirely correct; unmeasured variables disturb the relationships portrayed in a systematic rather than a random fashion; and (2) there are correlated errors in the data. In all except the residuals of parental support and family decision making, however, the correlations among the residuals in both models are almost negligible in size.

Four of the five background factors have a sizeable effect on the degree of parental support received by boys (Figure 3). By far the major causes of parental support, however, are parental education (.41) and father's employment stability (.40). The effect of the other two variables is small and of the same magnitude (-.07); since the magnitude of these effects is small, the fact that they are in the negative direction is not considered significant.

The same general pattern with respect to background factors and parental support is repeated for girls (Figure 4) with the exception that the effect due to mental ability did not appear to be statistically significant, and this path was therefore deleted from the model.

The determinants of participation in family decision making (X_4) are generally the same as for parental support, for both sexes. The major factor as far as boys are concerned is the employment stability of the father (.42), while for girls it is the amount of education held by the parents (.39).

The major cause of academic failure, in both models, is mental ability; the magnitude of effect for males is .17, for females it is .21. This relationship, of course, is not surprising. The other causes are community size (.07 for both sexes) and parental education, which appears only in the model for males.

The factor indicated by both models as the determinant of the number of programs available is, as was hypothesized, community size. In the model for girls (Figure 4) this relationship appears as the largest single cause-effect relationship (.41). Mental ability also appears as a determinant of this factor (.16 for males and .12 for females).

The effect of the employment stability of the father on participation in family decision making is greater for males than for females. This is the only relationship between background and experiential factors where differences due to sex appeared.

Of the nine variables that precede the attitudinal variables, six in the model for males, and seven in the model for females, appear as determinants of self attitude. The three variables with the greatest effect for males are parental support (.22), family decision making (.12),

and mental ability (.11); for females they are parental support (.10), father's employment stability (.19), and mental ability (.10). The cause of the other attitudinal variable, sense of personal efficacy, is pretty well the same for both models; the effect of mental ability in the model for males is .18, and for females, .30. Both attitudinal variables have a statistically significant effect on vocational indecision.

The differences that appear due to sex with regard to causes of variation in the attitudinal variables are: (1) parental support, as a determinant of self attitude is greater for males; and (2) mental ability, as a determinant of a sense of personal efficacy, is greater for females.

A number of the original hypotheses made in this study and well supported in the literature, were not supported by the data (see the broken lines, Figures 3 and 4). A possible source of error in any piece of research, according to Sewell (1973, p. 1538), is the definition and measurement of the variables. With the differences that exist in Newfoundland as compared to the rest of Canada (already argued for pp. 9-12), this appears as a very possible source of error in this study. Since the data used were not original data, there was little choice of the types of measures used. In addition to this possible measurement problem, it is entirely possible that because of the Newfoundland differences, factors important in other regions might be relatively unimportant in Newfoundland, and vice versa, factors considered of little consequence in other regions, might be important in Newfoundland.

IMPLICATIONS FOR RESEARCH AND PRACTICE

The general model developed in this study attempted to integrate some of the correlates of vocational indecision into a theoretically

meaningful causal scheme. It specified a fairly large number of relationships, as causal models go, and as such could be made the subject of further research. For example, as has already been indicated, a study might be designed including other exogenous and intervening variables that might make a significant contribution to the dependent variable. Such variables (measures of which were not available for this study) might include occupational status of older siblings, amount of school time formally devoted to career choice, availability of printed materials regarding careers, to name just a few.

Awareness and understanding of occupational alternatives is a problem regularly facing young people. Vocational decision-making, it seems, would tend to be more fruitful when based on broad factual knowledge and experience--and experience is precisely what students choosing a career do not have. To some degree, these experiences could be provided in simulated form.

The "Life Careers" game developed by Professor James Coleman and Dr. Saranne S. Boocock at John Hopkins University, offers the players some idea of the major "life style alternatives," although it does not deal in detail with specific vocations (Abt, 1970, p. 79). What is still needed is a series of simulated games that offer condensed and clarifying simulated experiences of actually working in an occupational role. With such a series, any student could sample various occupational games to explore quickly the nature, opportunities, requirements, etc., of specific occupations.

These models, among other things, attempt to account for the rate of academic failure in the high schools of Newfoundland. While using five variables often associated with academic failure, 97 percent of the variance

in both models is still accounted for by variables outside the system. This fact, then, raises the question of the adequacy of educational policies for Newfoundland based on findings from other areas.

The process involved in the formation of a career choice appears to be rather similar for both males and females, but with some important differences. These differences are sufficient to indicate variables effective for males may not be effective for females, and that a single prescriptive treatment might not be adequate to meet the needs of males and females.

In a society in which most people depend on their jobs for income, security, self respect, status, and even personal fulfilment, little attention seems to be given to the important topic of career choice. Clearly, some form of aid is necessary which would supply the research needed on the vocational problems of our youth.

BIBLIOGRAPHY

- Abt, Clark C.
1970. Serious games. New York: Viking Press.
- Barker, R. G., et al.
1962. Big school--small school. A report to the Office of Education, U. S. Department of Health, Education, and Welfare, from the Midwest Psychological Field Station, University of Kansas.
- Bernstein, B.
1961. Social class and linguistic development: a theory of social learning. In Campbell, W. J. (ed.) (1970) Scholars in context. New York: John Wiley & Sons.
- Blalock, H. M.
1968. Theory building and causal inferences. In Blalock, H. M., and Ann B. Blalock (eds.) Methodology in social research. New York: McGraw Hill.
1964. Causal inferences in non-experimental research. Chapel Hill, N. C.: University of North Carolina Press.
1971. Causal inferences, closed populations, and measures of association. Pp. 139-152 in Blalock, H. M. (ed.) Causal models in the social sciences. Chicago: Aldine Albertson Inc.
1969. Theory construction. New Jersey: Prentice-Hall Inc.
- Blau, P. M., and O. D. Duncan
1967. The American occupational structure. New York: Wiley & Sons.
- Blishen, B. R.
1967. A socioeconomic index for occupations in Canada. Canadian Review of Sociology and Anthropology. 4 (February): 41-43.
- Boocock, S. S.
1972. An introduction to the sociology of learning. Boston: Houghton Mifflin Co.
- Boyle, R. P.
1969. Path analysis and ordinal data. American Journal of Sociology. 75: 461-480.

Breton, Raymond

1972. Social and academic factors in the career decisions of Canadian youth. Ottawa: Department of Manpower and Immigration.

1967. Career decisions of Canadian youth: a compilation of basic data. Ottawa: Department of Manpower and Immigration.

Brookover, W. B., S. Thomas, and A. Patterson

1964. Self concept of ability and school achievement. *Sociology of Education*. 37(3): 271-278.

Brown, Cassie (with Harold Horwood)

1972. Death on the ice. Toronto: Doubleday Canada Ltd.

Campbell, W. J. (ed.)

1970. Scholars in context: the effects of environment on learning. New York: John Wiley & Sons.

Central Advisory Council on Education: Children and their primary schools.

London: Her Majesty's Stationery Office.

Clark, B.

1962. Educating the expert society. San Francisco: Chandler.

Clark, C. D., and N. P. Gist

1938. Intelligence as a factor in occupational choice. *American Sociological Review*. 3: 683-694.

Coleman, J. S.

1966. Equality of educational opportunity. Washington: Government Printing Office.

Collins, R.

1971. A conflict theory of sexual stratifications. *Social Problems*. 19(1): 3-21.

Conant, J. B.

1959. The American high school today. New York: McGraw Hill.

Coppersmith, M. S. (ed.)

1967. The antecedents of self-esteem. San Francisco: W.H. Freeman & Co.

Coser, R. L., and G. Rokoff

1971. Women in the occupational world: social disruption and conflict. *Social Problems*. 18(4): 535-554.

Cotgrave, Stephen, and Mary Fuller.

1972. Occupational socialization and choice: the effects of sandwich courses. *Sociology*. 6(1): 59-70.

Danziger, K. (ed.)

1970. Readings in child socialization. Oxford: Pergamon Press.

Dictionary of Occupational Titles.

1965. U.S. Department of Labour Publications. Washington: U. S. Government Printing Office.

Dominion Bureau of Statistics

1961. Occupational classification manual. Ottawa.

Douglas, J. W. B.

1964. The home and the school: a study of ability and attainment in the primary schools. London: MacGibbon & Kee.

Duncan, O. D.

1961. A socio-economic index for all occupations. Pp. 109-138 in Reiss, A. J. et al., Occupations and social status. New York: Free Press.

1966. Path analysis: sociological example. American Journal of Sociology. 72: 1-16.

, A. O. Haller, and A. Portes

1968. Peer influences on aspirations: a reinterpretation. The American Journal of Sociology. 74: 119-137.

Dynes, R. R., A. C. Clark, and S. Dinitz

1956. Levels of occupational aspirations: some aspects of family experience as a variable. American Sociological Review. 21: 212-215.

Eckland, B. K.

1967. Genetics and sociology: a reconsideration. American Sociological Review. 32(2): 173-194.

Elkin, F., and G. Handel

1972. The child and society: the process of socialization. New York: Random House.

Empey, L. T.

1956. Social class and occupational aspirations: a comparison of absolute and relative measurements. American Sociological Review. 21: 703-709.

Ginzberg, Eli

1962. The optimistic tradition and American youth. New York: Columbia University Press.

, et al.

1951. Occupational choice: an approach to a general theory. New York: Columbia University Press.

Gushue, W. J.

1973. And I won't buy the statement that our children are lazy and stunned. The Morning Watch. 1(1): 1-2.

Haller, A. O., and A. Portes

1973. Status attainment process. Sociology of Education. 46(1): 51-91.

- Halloran, J. D.
1967. Attitude formation and change. Leicester University Press.
- Hackhausen, H.
1967. The anatomy of achievement motivation. New York: Academic Press.
- Heise, D. R.
1969. Problems in path analysis and causal inference. Pp. 38-73 in Borgotta, E. F. (ed.), Sociological methodology. San Francisco: Jossey-Rass Inc.
- Hilton, T. L.
1962. Career decision making. Journal of Counselling Psychology. 9: 291-298.
- Holland, J. L.
1966. The psychology of vocational choice. Waltham, Mass.: Blaisdell Publishing Co.
- Horwood, Harold
1966. Tomorrow will be Sunday. Garden City, New York: Doubleday Canada Ltd.
- Hyman, H.H.
1953. The value system of different classes: a social psychological contribution to the analysis of stratification. Pp. 426-442 in Bendix, R., and S. M. Lipset (eds.), Class, Status, and Power. Glencoe, Ill.: Free Press.
- Jencks, C.
1972. Inequality. New York: Basic Books Inc.
- Jensen, A. R.
1969. How much can we boost IQ and scholastic achievement. Harvard Educational Review. 39: 1-123.
- Jensen, G. F.
1972. Parents, peers, and delinquent action: a test of the differential association perspective. American Journal of Sociology. 78: 562-575.
- Johnson, J.
1963. Econometric methods. New York: McGraw Hill.
- Kerckhoff, A. C.
1972. Socialization and social class. New Jersey: Prentice-Hall Inc.
- Kitchen, H. W.
1969. Educational policy for the seventies for Newfoundland. St. John's: Memorial University of Newfoundland.
1965. Differences in value orientations: a Newfoundland study. The Canadian Administrator. 5: 9-13.
- Kohn, M. L.
1963. Social class and parent-child relationships: an interpretation. American Journal of Sociology. 68: 471-480.

- Komarovsky, M.
1952. Cultural contradictions and sex roles. *American Journal of Sociology*. 52: 182-189.
- Korman, A. K.
1966. Self-esteem variables in occupational choice. *Journal of Applied Psychology*. 50: 479-486.
- Labovitz, S.
1970. The assignment of numbers to rank order categories. *American Sociological Review*. 35(3): 515-524.
- Land, K. C.
1969. Principles of path analysis. In Borgotta, E. F. (ed.), *Sociological Methodology*. San Francisco: Jossey-Rass Inc.
- Lazarsfeld, P. F.
1962. Cited in Lipset, S. M., and Bendix, Social mobility in industrial society. Berkeley: University of California Press.
- Lipset, S. M.
1955. Social mobility and urbanization. *Rural Sociology*. 20: 220-228.
- Long, M. E.
1970. The educational and occupational aspirations and expectations of high school students in Newfoundland. Unpublished Master's thesis, Memorial University of Newfoundland.
- Lucas, R. A.
1971. Minetown, milltown, railtown. Toronto: University of Toronto Press.
- McNeil, Eltan B.
1969. Human socialization. Blemonit, California: Breaks/Cole Publishing Co.
- Mollenkopf, W. G., and S. D. Melville
1956. A study of secondary school characteristics as related to test scores. Princeton, New Jersey: Educational Testing Service.
- Moser, W. C.
1949. Vocational preference as related to mental ability. *Occupations*. 27: 460-461.
- Mowat, Farley, and John deViser
1968. This rock within the sea: a heritage lost. Toronto: Little, Brown and Co.
- Nie, N. H., D. H. Bent, and C. H. Hull
1970. Statistical package for the social sciences. New York: McGraw Hill.

- Noel, S. J. R.
1971. Politics in Newfoundland. Toronto: University of Toronto Press.
- Otis-Lennon, M. A. T.
1965. Otis-Lennon Mental Ability Test, Advanced Form. New York: Harcourt, Brace, & World.
- Rehberg, R. A., W. E. Schafer, and J. Sinclair.
1970. Toward a temporal sequence of adolescent achievement variables. *American Sociological Review*. 2: 67-73.
- Reiss, J. R.
1961. Occupation and social status. New York: Free Press of Glencoe.
- Report of the Royal Commission on the Economic State and Prospects of Newfoundland and Labrador
1967. St. John's: Creative Printers.
- Rosenberg, M.
1965. Society and the adolescent self-image. New Jersey: Princeton University Press.
- Rossi, P. H.
1961. Social factors in academic achievement. Pp. 269-273 in Halsey, A. et al. (eds.), Education, economy, and society. New York: Free Press.
- Rotter, J. B.
1954. Social learning and clinical psychology. New Jersey: Prentice-Hall Inc.
- Rowe, F. W.
1959. Aims of public education for Newfoundland. Bulletin No. 2-A. Division of Curriculum, Department of Education, St. John's, Newfoundland.
- Rummel, R. J.
1970. Applied factor analysis. Evanston: Northwestern University Press.
- Sewell, W. H.
1973. Symposium on Jencks's inequality. *American Journal of Sociology* 78(6): 1532-1540.
- _____, A. O. Haller, and A. Portes
1969. The educational and early occupational attainment process. *American Sociological Review*. 34: 82-89.
- _____, A. O. Haller, and M. A. Strauss
1957. Social status and educational and occupational aspirations. *American Sociological Review*. 22: 67-73.
- _____, and A. M. Orenstein
1965. Community of residence and occupational choice. *The American Journal of Sociology*. 70: 551-563.

Sewell, W. H., and V. Shah

1967. Socio-economic status, intelligence, and the attainment of higher education. *Sociology of Education*. 40: 1-23.

_____ and V. Shah

1968. Social class, parental encouragement, and educational aspirations. *The American Journal of Sociology*. 73: 559-572.

Simpson, R. L.

1962. Parental influence, anticipatory socialization, and social mobility. *American Sociological Review*. 27: 517-552.

Spady, W. G., and D. Greenwood

1970. Instant pattern analysis: an elementary cook book. *The Generator*. 1(1): 3-8.

Super, D. E.

1953. A theory of vocational development. *American Psychologist*. 8: 185-190.

Tumin, M. N.

1970. Some principles of stratification: a critical analysis. In Tumin, M. N. (ed.), *Readings on social stratification*. New Jersey: Prentice-Hall Inc.

Turner, M. E., and C. D. Stevens

1971. The regression analysis of causal paths. Pp. 75-100 in Blalock, H. M. (ed.), *Causal models in the social sciences*. Chicago: Aldine Atherton Inc.

Turner, R. H.

1964. Some aspects of women's ambitions. *The American Journal of Sociology*. 70: 271-285.

Vickers, M. J.

1972. An investigation into the career aspirations and expectations of grade XI students in St. John's, Newfoundland and the congruency of these variables with the occupational distribution of Canada's employed labour force. Unpublished Master's thesis, Memorial University of Newfoundland.

Wadel, Cato

1969. Marginal adaptations and modernization in Newfoundland: a study of strategies and implications of resettlement and redevelopment of outport fishing communities. St. John's: Institute of Social and Economic Research, Memorial University of Newfoundland.

1973. Now whose fault is that--the struggle for self-esteem in the face of chronic unemployment. St. John's: Institute of Social and Economic Research, Memorial University of Newfoundland.

Whitaker, Ian

1967. Sociological preconditions and concomitants of rapid socioeconomic development in Newfoundland. Pp. 369, in Report of the Royal Commission on the Economic State and Prospects of Newfoundland and Labrador. St. John's: Creative Printers.

Williams, Trevor

1969. Educational aspirations: longitudinal evidence on their development in Canadian youth. Unpublished Master's Thesis, University of Toronto.

Woelfel, J., and A. O. Haller.

1971. Significant others, the self-reflexive act and the attitude formation process. American Sociological Review. 36: 74-87.

Wright, S.

1921. Correlation and causation. Journal of Agricultural Research. 20: 557-585.

